

rom his observation aircraft, **Randy Eardley** had a panoramic view of the inferno: "Flames threatened homes at every turn, people filled the roads, fire engines tried to maneuver from place to place, and the radio traffic in my headset was feverish all afternoon. As the fire crested a ridge off Hulls Gulch, I could feel the intense heat even inside the airplane, which instantly became an oven."

"It was frustrating at times," recalls Eardley, the air tactical supervisor at the Bureau of Land Management's Lower Snake River District in Idaho. "We were battling extreme fire behavior, trying to protect homes in the interface, and dealing with thousands of casual observers clogging narrow roadways, which hampered firefighters' ability to get around. We even had to call off some retardant drops because there were too many people on the hillside and in the way."

Boise's 8th Street fire began around 2:30 p.m. on August 26, allegedly started by a tracer bullet fired in the Boise Police Association Reserve Firing Range at the northeast edge of town. The wildland fire raged all day and late into the evening, ultimately burning 15,300 acres. The flames consumed most of four watersheds and the backyard playground of thousands of Boiseans. Dozens of homes were threatened; only one was partially burned. Local, state, and federal forces fought the fire at a cost of \$3.5 million.

"All of the conditions here were ripe for this type of fire," says Eardley. "We had an excess of fuel, a hot and dry day (104 degree temperature), very strong winds, and narrow drainages. And it happened in an interface area (where urban development meets wildlands) with people and homes everywhere. Given all the subdivisions that were threatened, it's remarkable that we didn't have greater damage or serious injuries."

BLM officials believe most Boise residents now have a better understanding of the powerful threat posed by wildland fire, but are concerned that many homeowners and potential homeowners in interface areas may become complacent because of the successful protection provided by local, state, and federal firefighting resources.

Where Cities Meet Wildlands

Clockwise from top left, straw bail check dams were constructed in drainages to slow runoff and store sediment. The fire destroyed bridges and other improvements to the Hulls Gulch Interpretive Trail system. Mini excavators were used to dig trenches to help stop erosion at the

upper elevations. Volunteers donated more than 2,000 hours performing such tedious jobs as hand-planting bitterbush seed. Remote Automatic Weather Stations provided by the National Interagency Fire Center transmit weather information to the National Weather Service to help in forecasting flood danger.

## Watershed Rehabilitation and echniques

**Contour Felling**: Burned trees 8-14 inches in diameter and 15 to 30 feet long were cut and laid horizontally on a total of 272 acres in Hulls Gulch and Upper Crane Creek. Log terraces will slow overland runoff, allow the moisture to soak into the ground, and reduce sediment bulking before it has a chance to become a mudslide.

**Hand Trenches and Straw Wattles**: About 1,600-1,700 acres of hill slopes were treated with hand trenches and straw wattles. Trenches were dug by hand using pulaskis and combi tools. They will slow overland runoff and give it a chance to soak into the ground. Wattles-straw logs wrapped in photodegradable mesh-work much the same as hand trenches. They are eight inches in diameter, 25 feet long, and weigh 35 pounds. They are laid horizontally in cup trenches on 30-50 percent slopes, and are held in place by wooden stakes. Wattles are placed in a checkerboard fashion to assist in interrupting overland runoff. This will help stabilize the hill slopes and capture sediment, reducing the loss of soil productivity and the threat of flooding.

**Mechanical Contour Trenches**: At the upper levels, about 1,000 acres were treated with about 40 miles of trenches constructed by miniexcavators. Trenches are 2-3 feet wide and 2-3 feet deep. They are spaced vertically about 75-120 feet apart on 40 to 65 percent slopes. As runoff and erosion occur, sediment will collect

in the trenches and the excavated soil will smooth out naturally and gradually over time.

**Tilling**: Nearly 3,000 acres have been tilled in a stripped or banded pattern across the slopes, with blades set about five feet apart and generally covering about 25-50 percent of each acre. This breaks up the water repellence and adds hill-slope storage, which slows runoff, increases infiltration, and provides a good seed bed. These areas will now be aerially seeded. Undisturbed strips allow existing vegetation to resprout.

Straw-Bale Check Dams: Straw bales were used to build 2,230 check dams across the smaller stream channels, higher in the stream systems where flood waters potentially would not yet have had a chance to build significant force. A series of straw bales are laid end-to-end, wrapped in chicken wire or photodegradable mesh, and positioned across the channel in a shallow trench. An erosion cloth is draped across the bales, which allows water to flow through while retaining the soil. These dams will help trap and temporarily store runoff of water and sediments, prevent down-cutting of the channel, and reduce peak flows by routing water through several small basins.

**Seeding and Planting**: Drill seeding, hand seeding, and aerial seeding have been done on thousands of acres. More than 200,000 bitterbrush seedlings will be planted over the next two years. As

root structures grow, they will help stabilize the hill slopes and will work together with other treatments to reduce the danger of flooding and debris flows. Seed mixes include bitterbrush, five varieties of wheatgrass, bluegrass, orchardgrass, small burnet, sweet clover, sagebrush, alfalfa, western yarrow, and Lewis flax.

**Sediment Basins**: Six small sediment basins have been constructed, on state and private land. The ponds are 40 to 70 feet in diameter and six to ten feet deep. They will slow overland flows and allow sediment to settle out as water, mud, and debris flow down the drainages.

Several times during the project, unexploded military munitions were discovered within and outside an old military training area. At one point, all rehabilitation operations were stopped for several days while military mine sweeping personnel cleared the area to help ensure the safety of project personnel.

The City of Boise is contemplating the construction of several large catchment basins and dams in strategic locations; however, that proposal must first be addressed through the city's planning and public participation process.